

REMARKS

Claims 1-21 are currently pending in the application.

Applicants have amended claims 1, 6, 9, 13, 16, 19 and 20 to include in the independent claims that the surfactant is added to increase the rate of the polishing. The Examiner remarked in the Office Action that the arguments presented by Applicants about the effect of the surfactant on increasing the rate of polishing was not recited in the claims. Accordingly, this recitation has been added to the independent claims.

The claims stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kaufman et al (Kaufman) in view of Sun et al (Sun) and Costas et al (Costas) or Yoshida et al (Yoshida). Applicants request reconsideration of the rejection in view of the amendments made to the independent claims and for the following reasons.

Applicants arguments distinguishing the invention from the primary reference to Kaufman are of record in Applicants' previously filed Amendments. In particular, Kaufman is relied upon for disclosing the addition of phosphoric acid to a Cu polishing slurry. In Kaufman, however, the surfactant is used as a dispersion agent for stabilizing an abrasive contained in the polishing slurry and not for increasing the polishing

rate, which is an advantage stated in the specification on page 15, lines 12-19 and page 46, lines 13-21, for example.

The Office Action states that the same effect is achieved in Kaufman as in the present invention because Kaufman's slurry contains both an anticorrosive and a surfactant. When a surfactant is added to a polishing slurry with an abrasive, however, the surfactant is added for the purpose of dispersion. Further, one having ordinary skill in the art knows that the mechanical polishing function will be reduced due to the adhesion of the surfactant to the surface of the abrasive. Accordingly, the skilled artisan would conclude that the polishing rate would be reduced by adding the surfactant. Therefore, Kaufman does not teach to one having ordinary skill in the art that it is obvious to use a polishing liquid that includes a protection-layer forming agent comprised of an anti-corrosive and a surfactant of a molecular weight not less than 10,000 to increase the rate of the polishing.

The reference to Sun is applied for disclosing an abrasive free polishing slurry to which a surfactant is added for Cu polishing. In particular, Sun discloses that a phosphoric acid is added as a pH adjusting agent, as set forth in col. 5, lines 26-31 of the reference. However, the

reference must be considered in its entirety with respect to the disclosure of the abrasive free polishing slurry. That is, the reference states that the polishing method uses a polishing pad that contains an abrasive in combination with a slurry that is free from an abrasive. Further, Sun does not disclose or suggest increasing a polishing rate, as in the present invention, by the addition of a surfactant.

Therefore, when considering the entirety of the disclosure set forth by Sun, it is seen that the reference is deficient in teaching that which would be required in order to modify Kaufman and arrive at the claimed combination of the invention.

With respect to Costas, the reference discloses the use of an abrasive containing slurry. The polymer disclosed by Costas is used for the purpose of protection against scratching or the re-adhesion of residue. However, the reference does not describe increasing the rate of polishing, as required by the claimed invention.

Yoshida is not related to the slurry for metal CMP, but rather to CMP of an insulating film of SiO₂. Yoshida discloses the addition of ammonium polyacrylate to the slurry containing cerium oxide, which functions as an abrasive. Accordingly, Yoshida is limited in its disclosure to that of

the addition of ammonium polyacrylate which has a particular molecular weight, however, the reference is not sufficient in its disclosure to overcome the deficiencies in Kaufman.

In view of the foregoing, the claims as amended are respectfully asserted to be patentable over the art of the record and in particular over Kaufman in view of Sun and Costas or Yoshida. Therefore, the rejection under 35 U.S.C. § 103(a) should be withdrawn.


FILING OF RCE

Applicants have amended the independent claims to include a new issue requiring further search and/or consideration. Therefore, Applicants have filed an RCE to ensure entry of the amendments to the claims.

REQUEST FOR INTERVIEW

Applicants request an Interview with the Examiner prior to first action, which is ordinarily permitted as mentioned in MPEP 706.07(b).

Respectfully submitted,


John R. Mattingly
Registration No. 30,293
Attorney for Applicant(s)

MATTINGLY, STANGER & MALUR
1800 Diagonal Road, Suite 370
Alexandria, Virginia 22314
(703) 684-1120
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